

RECORDS OF SOME PLIOCENE AND  
PLEISTOCENE REPTILES AND AMPHIBIANS  
FROM MEXICO

By BAYARD H. BRATTSTROM\*

A considerable number of fossil vertebrates from Pliocene and Pleistocene localities in Mexico have accumulated in the collections of the California Institute of Technology. A few of the fossil species from these deposits have been described, but the bulk of the material is still unexamined. In addition to the lizards from the San Josecito Cavern deposits already discussed (Brattstrom, 1955b), reptiles and amphibians have been found in this Mexican material from three major areas. These are: The Pliocene Yepomera formation of Chihuahua, the Pliocene Goleta formation of Michoacan, and the Pleistocene deposits of Zumpango, México, Mexico. Though most of the material is quite fragmentary and can only be identified to genus, the identifiable material is of considerable interest as our knowledge of late Cenozoic zoogeography of Mexico is little known and any information is useful.

YEPOMERA FORMATION, CHIHUAHUA

Fossil vertebrates have been obtained by the California Institute of Technology from continental deposits exposed in the drainage basin of the Rio Papigochic in western Chihuahua, Mexico. Quarries in fossiliferous outcrops have been opened in the vicinity of Matachic, Yepomera, and to the north of Yepomera in the general area called Rincon. The relative ages of the various quarry sites have not been determined in detail, but the faunas are of Hemphillian age. The described mammals from the Yepomera or Rincon area include a rabbit, *Notolagus velox* (Wilson, 1937); a badger, *Taxidea mexicana* (Drescher, 1939); an antilocarpid, *Hexobelomerix fricki* (Furlong, 1941); a marmot, *Marmota mexicana* and two ground squirrels, *Citellus pattersoni* and *C. matachicensis* (Wilson, 1949); a bear, *Hyaenarctos schneideri* (Stock, 1950); and the horses *Pliohipous* (A.) *stockii*, *P. (P.) mexicanus*, *Nannipus* cf. *minor*, and *Neohipparion* cf. *phosphorum* (Lance, 1950). The only herpetological material thus far found in these deposits is a toad which is described here as new:

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\*Contribution No. 718, Division of Geological Sciences, California Institute of Technology, Pasadena 4, California.

**Bufo campi** new species

TYPE: California Institute of Technology number 276/5120 consisting of a left tibia-fibula.

TYPE LOCALITY AND AGE: C.I.T. Locality 276, Pliocene, Yepomera Formation, Petterson field locality: Arroyo de Los Burros, Rincon, Chihuahua, Mexico.

DIAGNOSIS: A *Bufo* characterized by having a thin, wide, median ridge on the side of the tibia-fibula lateral to the central foramen on the face of the tibia-fibula.

DESCRIPTION OF TYPE: The holotype (Fig. 1) consists of a tibia-fibula of a large *Bufo* (almost as large as *B. alvarius*) with a thin, lateral, wide (or high, *ie.* up from main part of bone) ridge on the median side lateral to the foramen on the dorsal surface of the bone. The distal end of the bone consists of the typical two circular projections separated at their tips by .6 mm. The dorsal median foramen is the most distal and is posteriorly projecting. Lateral to the edge of this foramen there is a medial ridge running distally and finally joining the lateral ridge at a point where the dorsal distal groove ends. On the proximal end



PLATE 1  
Dorsal view  
of holotype  
(C.I.T. 5120)  
of *Bufo campi*  
new species.

of the bone the same type of processes are present, but they are not separated at their tips. There is a ridge-like process on the dorsal side of the lateral one of these tips. The tibia-fibula measures 35.5 mm. long. The length and width of the proximal end is 5.9 and 3.5 mm. and the length and width of the distal end is 6.4 and 3.3 mm. respectively.

DISCUSSION: In size the tibia-fibula of *Bufo campi* is almost the same as a good-sized *B. alvarius* or slightly smaller, and is less robust than in a very large *B. marinus*.

The only North or Central American species of *Bufo* having a lateral spine or ridge on the tibia-fibula are *B. simus* (where the ridge is just barely discernible) and *B. valliceps* (where there is a small ridge even less evident than in *simus*). In neither of these species is the ridge as well developed as in *campi* where it is about one-fourth the width of the tibia-fibula. *B. campi* also differs from *B. simus* and *valliceps* in having a longer tibia-fibula and in having the most distal foramen separated from the proximal end of the distal groove by a space almost as long as the length of the groove itself (6.5 mm.). In *B. simus* the most distal foramen is at the end of the groove between the two processes of the distal end of the bone.

In general it is not wise to describe new fossil anurans on the basis of limb elements alone. In the case of greatly different and distinct forms, where confusion will probably not occur, it seems a valid practice however.

This species is named for Dr. Charles L. Camp, Museum of Paleontology, University of California, Berkeley, who was the first to identify fossil toads from the Pleistocene of Rancho La Brea and who has also contributed greatly to the early taxonomy of the recent amphibians of western North America.

#### GOLETA FORMATION, MICHOACAN

Very little work has been done on the vertebrates from the Pliocene Goleta Formation, Morelia, Michoacan, Mexico. In the California Institute of Technology collection there are fragments of bones of the turtles *Testudo* and *Kinosternon* which are too fragmentary for specific identification. The only identifiable snake is the following:

##### *Lampropeltis intermedius* Brattstrom

One vertebra was collected at C. I. T. Locality 505, Pliocene, Goleta Formation, Morelia, Michoacan, Mexico, in the most northern barranca on the west side of the north drainage basin,  $\frac{3}{4}$  miles S. W. of Colonia Miguel Hidalgo in clays in badland exposures. This specimen was discussed previously (Brattstrom, 1955a) when the species was described.

#### ZUMPANGO AREA, MEXICO

Reptiles and amphibians in Pleistocene collections from Municipal de Texuixquiac, District of Zumpango, México, Mexico in the California Institute of Technology come from three localities, C.I.T. 309 (Barranca de Rio Grande), 310 (Kilo 61 del Gran Canal), and 311 (Cantera Vieja). The vertebrates of these deposits and notes on their stratigraphy and location have been mentioned by Furlong (1925) and Maldonado-Koerdell (1947, 1948). Late Pleistocene vertebrates from the Zumpango area include: *Equus*, *Capromeryx mexicana*, *Platygonus*, *Canis dirus*, *Camelops*, *Bisons*, and *Elephas* (Furlong, 1925). The herpetological material is all quite small and fragmentary. Of the forms present, only two can be identified to species.

##### *Bufo* sp.

Toad bones come from locality 310 (4 vertebrae, a tibia-fibula, fragments of the cranium and various leg bones) and locality 311 (lower jaws, astragalus and calcaneum, and fragments of bones). The bones from these two localities differ from each other, but none of the diagnostic bones for specific determination of toads are present.

##### *Rana* sp.

A tibia-fibula and a radio-ulna from locality 310 can not be referred to species due to the lack of comparative material and of diagnostic bones.

*Ambystoma* sp.

One atlas from locality 310, is referred to this genus on the basis of size and shape. It differs from *Siredon mexicanum* in being wider, the neural canal is rounder, and the shape of the postzygosphene arch posteriorly is different. It differs from specimens of *Ambystoma tigrinum* in being larger, wider, and in having the anterior condyles extending laterally so that they are horizontal ellipses and are not round as in *A. tigrinum*. No vertebrae have been seen of the possibly extinct *Bathysiredon* and the fossil may agree with that form.

*Sceloporus jarrovi* Cope

Ten small thoracic vertebrae from locality 309 do not differ from recent skeletons of this scaly lizard.

*Crotalus scutulatus* (Kennicott)

Two mid-thoracic vertebrae from locality 310 do not differ from recent specimens of this species. Width and length (at centrum) of the vertebrae are 6.3-8.1 and 6.5-6.4 mm. respectively; centrum height and width are 3.6-4.1 and 3.0-3.4, and zygosphene height (from top of cup) and width are 2.9-4.6 and 3.5-4.5 mm. respectively.

## LITERATURE CITED

- Brattstrom, Bayard H.  
 1955a. Pliocene and Pleistocene amphibians and reptiles from Southeastern Arizona. *Journal of Paleontology*.  
 1955b. Pleistocene lizards from San Josecito Cavern, Mexico, with the description of a new species. *Copeia* 2:  
 Drescher, A. B.  
 1939. A new Pliocene badger from Mexico. *Bull. So. Calif. Acad. Sci.* 38 (2):57-62.  
 Furlong, E. L.  
 1925. Notes on the occurrence of Mammalian remains in the Pleistocene of Mexico, with a description of a new species, *Capromeryx mexicana*. *Univ. Calif. Publ. Dept. Geol. Sci. Bull.* 15 (5):137-152.  
 1941. A new Pliocene antelope from Mexico; with remarks on some known antilocaprids. *Carnegie Inst. Wash. Publ.* 530: (2):25-33.  
 Lance, John F.  
 1950. Paleontologia y estratigrafia del Plioceno de Yepomera, Estado de Chihuahua, Ia. Parte. Equidos, excepto *Neohipparion*. *Univ. Nac. Aut. Mex. Inst. Geol. Bull.* 54:1-81.  
 Maldonado-Koerdell, M.  
 1947. Nota preliminar sobre una fauna subfossil de pequenos vertebrados en un antiguo delta de la region de Zumpango, Mex. *Rev. Soc. Mexicana Hist. Nat.* 8:243-250.  
 1948. Los Vertebrados fosiles del Cuaternario en Mexico. *Ibid.* 9:1-35.  
 Stock, C.  
 1935. New type of ground sloth from the later Cenozoic of Mexico. *Pan Amer. Geol.* 64:78.  
 1950. Note on a Hyaenarctid bear from the Middle Pliocene of Chihuahua, Mexico. *Bull. So. Calif. Acad. Sci.* 59 (1):1-2.  
 Wilson, Robert W.  
 1937. A new genus of Lagomorph from the Pliocene of Mexico. *Bull. So. Calif. Acad. Sci.* 36:98-104.  
 1949. Rodents of the Rincon Fauna, Western Chihuahua, Mexico. *Carnegie Inst. Wash. Publ.* 584 (4):167-176.